CHENBRO

Storage Chassis
4-Port Mini-SAS Backplane

80H10321513C0

User's Manual

September / 10 / 2009

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Revision History

Date	Modifications
March / 01 / 2009	● **First release**
Sep. / 10 / 2009	● **Add CN2 Pin Definition**

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Backplane Specification

80H10321513C0 (Version C0)

Host Interface	**Mini-SAS (SFF-8087)**
HDD Interface	**SAS (22+7) and SATA-II compatible**
Hot-Swap	**Yes, allows user to replace HDD on line**
Display	**LED indicates HDD status (Defined by Chenbro)** **Power LED – Blue (When HDD is present)** **Access LED –Green (When HDD is busy)** **Error indicator – Red (Error when retreating signals)**
Cooling	**Five Fan connectors**
Environment Monitor	**Temperature sensor**
Connectors	**1. SFF-8087 x1 to host** **2. SAS (22+7) x4 (for HDD)** **3. Standard 4P Power connector x2** **(+5V & +12V from power supply)** **4. Box header x1**
Dimension	***419.5 (Width) x 23.0 (Height) x 2.4 (Thickness) mm***
Material	**FR4 4 layer**

Accommodation Chassis

- ***RM11704B***
- ***RM12404B***
- ***RM13204***
- ***RM21508B***
- ***RM23212***
- ***RM31212B***
- ***RM41416B***
- ***RM51224B***
- ***RM51424***
- ***RM51924B***
- ***RM91250***

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Backplane Layout

Backplane Connectors

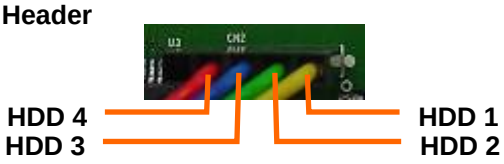
Front View

Rear View

(1) [CN11 / CN21 / CN31 / CN41] : Connect to 22-pin SATA-II or 29-pin SAS HDD

(2) [JF1 / JF2 / JF3 / JF4 / JF5] : Fan connectors 1~5

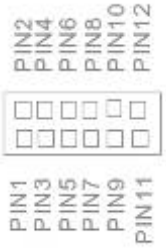
(3) [CN2] : HDD Failure LED Signal Pin Header



	Connect the 4-pin HDD LED cable (26H113322-001) from CN2 to the CATHODE of the HDD failure connector on RAID card. Refer to the RAID card's user manual for the detail pin definition.

(4) [CN3] : Reserved for factory use only

(5) [CN4] : Backplane ID setting jumper



Jumper Setting	Close Pin 1 & 2	Close Pin 3 & 4	Close Pin 5 & 6	Close Pin 7 & 8	Close Pin 9 & 10	Close Pin 11 & 12
Backplane ID	1	2	3	4	5	6

(6) [CN5] : Signal connector (Board to Board Connection)

(7) [CN6 / CN7] : 4-pin Power connectors

(8) [CN8] : Reserved for factory use only

(9) [CN9] : SGPIO HDD fail function jumper

Jumper Closed: Enable SGPIO HDD Failure Signal (Default)

Jumper Opened: Disable SGPIO HDD Failure Signal

(10) [CN10] : SGPIO HDD access function jumper

Jumper Closed: Enable SGPIO HDD Access Signal

Jumper Opened: Disable SGPIO HDD Access Signal (Default)

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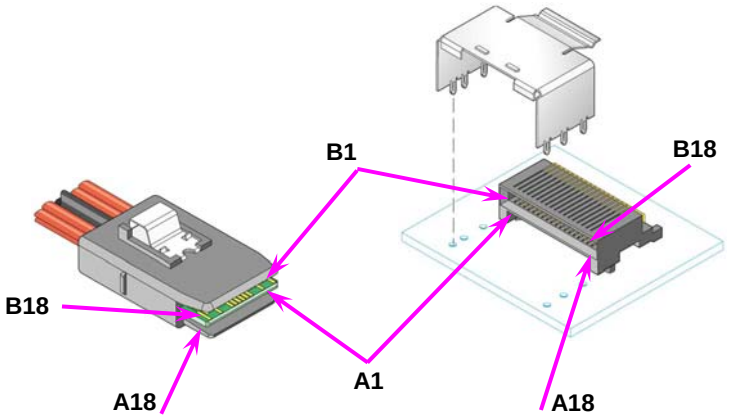
(11) [CN1] : Mini-SAS connector

Pin Definition: SFF-8087 Mini-SAS 36-pin cable plug and receptacle connectors



Sideband Definition: The following table defines the SGPIO signal assignments for the Mini-SAS receptacle connector

Pin Number	Pin	Signal
A8	Sideband 0	SClock
A9	Sideband 1	SLoad
A10	Sideband 2	Ground
B9	Sideband 3	Ground
B10	Sideband 4	SDataOut
B11	Sideband 5	SDataIn
A11	Sideband 6	Reserved
B8	Sideband 7	*SGPIO Enable / Disable

*** The following table shows the SGPIO function which is related to the jumper setting of CN9 & CN10 connector.**

CN9	CN10	SGPIO	Pin B8 Signal
Close	Close	Enable HDD failure and activity signal via SGPIO	Low
Close	Open	Enable HDD failure signal via SGPIO	Low
Open	Close	Enable HDD activity signal via SGPIO	Low
Open	Open	Disable HDD failure and activity signal via SGPIO	High

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Backplane Assembly

The Chenbro 4-Port Mini-SAS Backplane can be assembled on Chenbro Storage Server Chassis only. Please refer to the Chassis Quick Installation Guide for detail information.

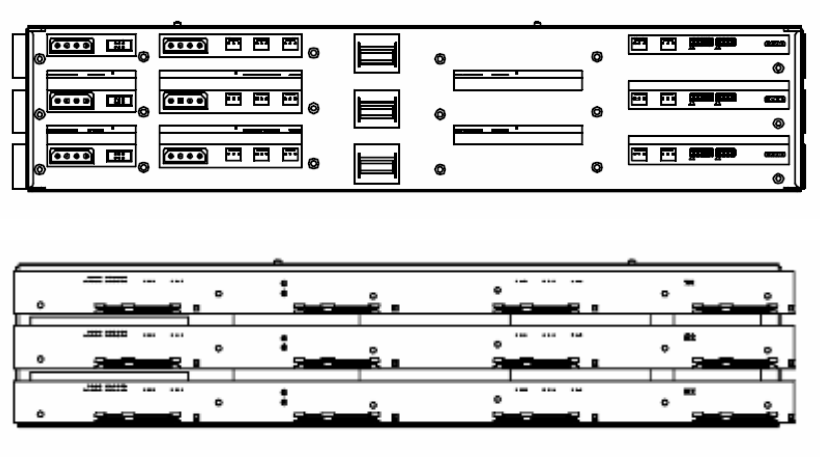

Figure 1: Front and Rear View of 3U Backplane assembly set

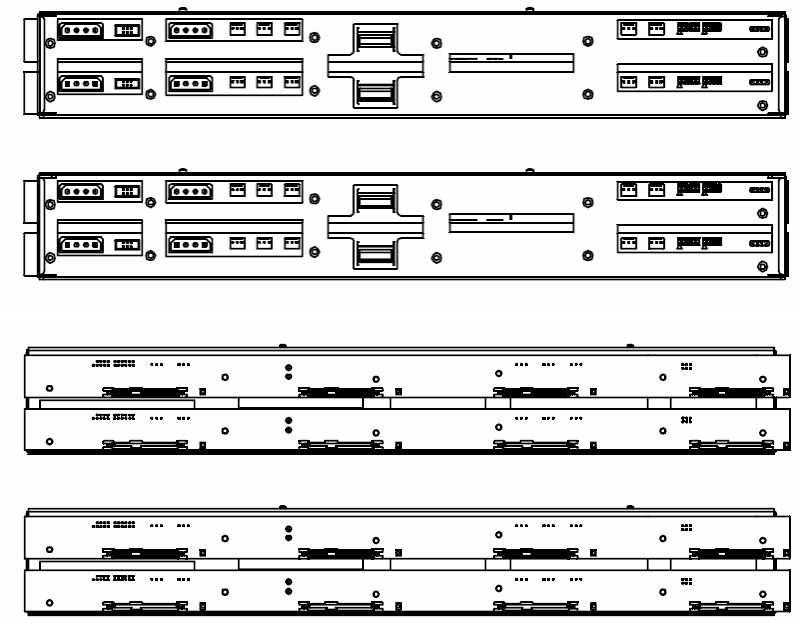

Figure 2: Front and Rear View of 4U Backplane assembly set
(Using two 2U Backplane assembly sets)

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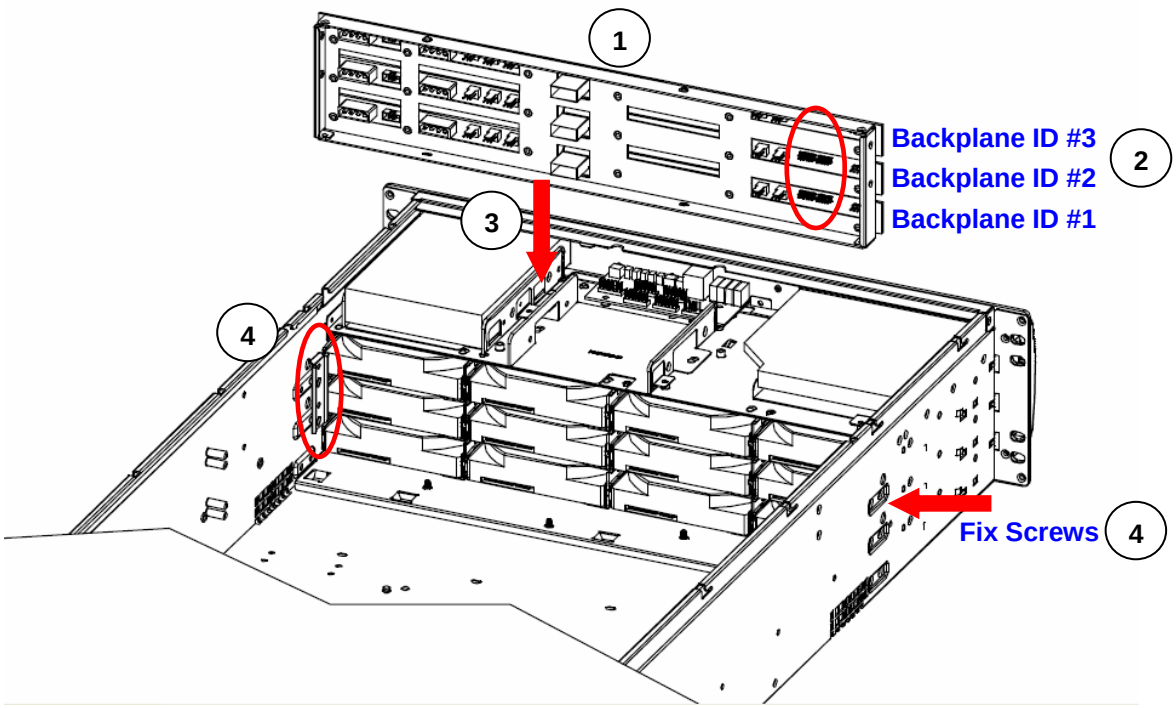
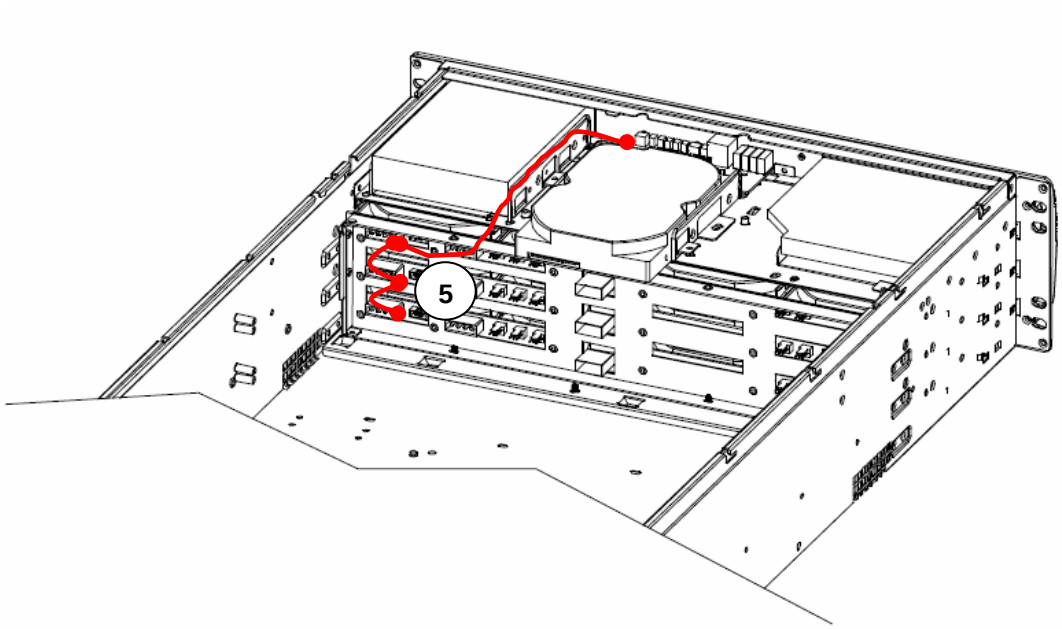
(A) Example of assembly procedure for RM31212B chassis

1. **Get the complete 3U backplane assembly set (with three backplanes) ready and make sure the backplane guide rail is installed before backplane assembly.**
2. **Make sure the backplane ID is configured properly from bottom to top with starting from #1 to #3.**
3. **Slide the backplane assembly set into the chassis.**
4. **Fix the backplane assembly set with screws on both sides of chassis.**
5. **Connect the LED board signal cable for each backplane and LED board.**
6. **Refer to "Backplane wiring" session for cable connection.**





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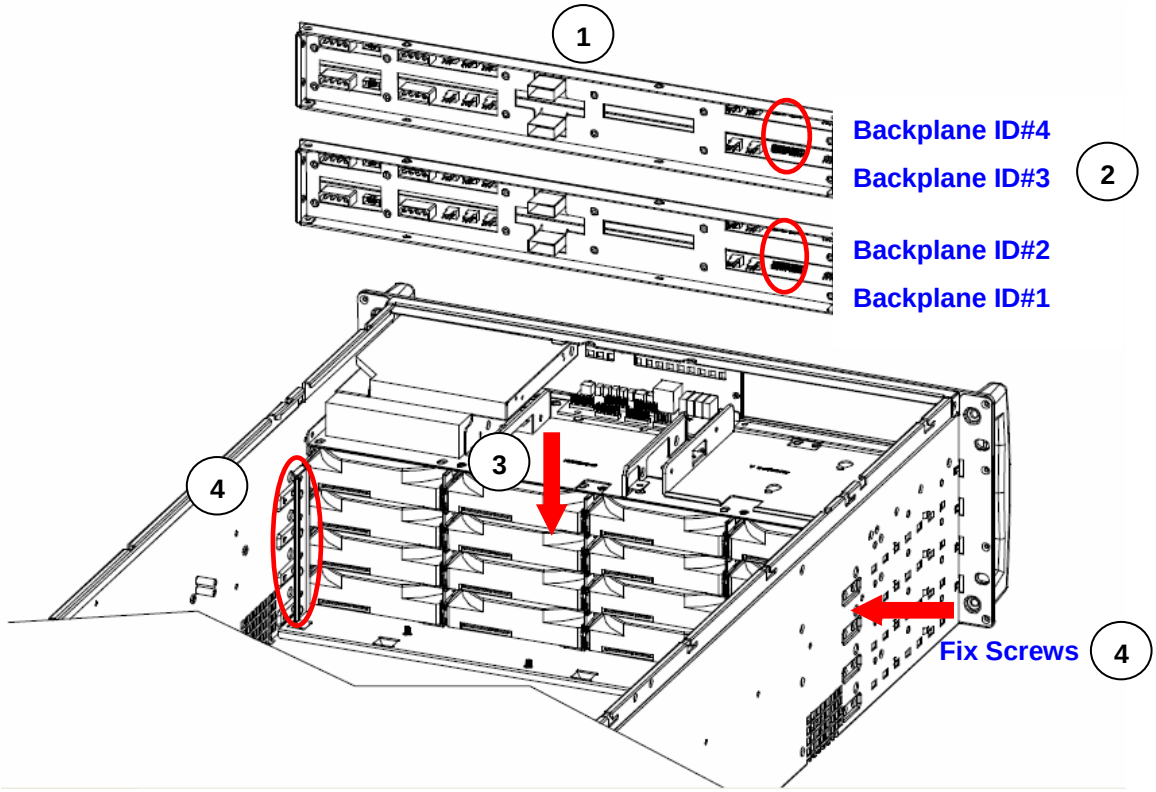
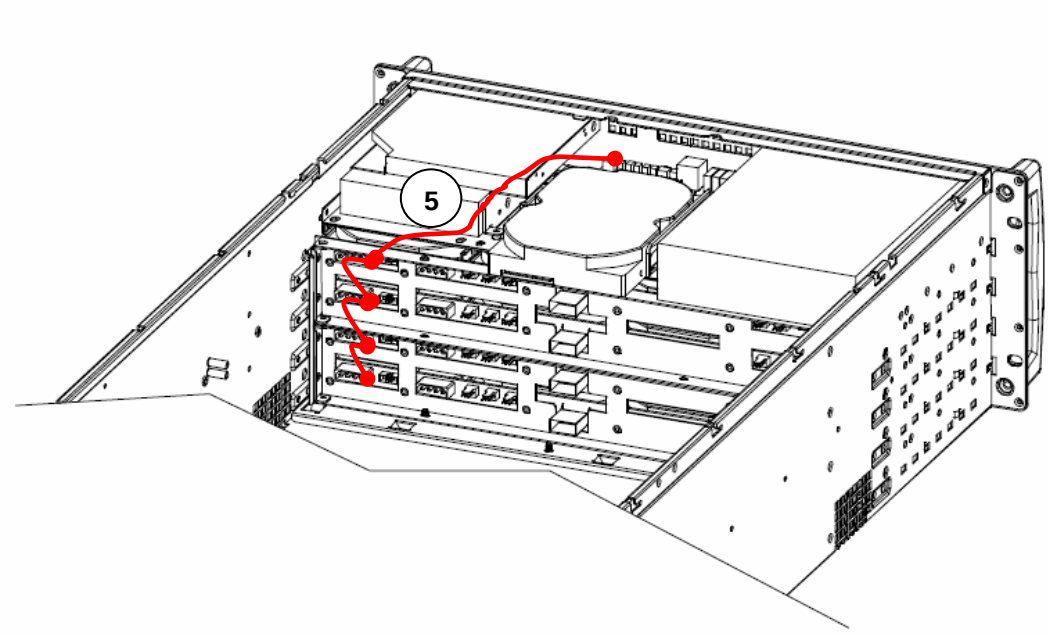
(B) Example of assembly procedure in RM41416B chassis

1. **Get the complete 4U backplane assembly set (with two 2U backplane assembly sets) ready and make sure the backplane guide rail is installed before backplane assembly.**
2. **Make sure the backplane ID is configured properly from bottom to top with starting from #1 to #4.**
3. **Slide the backplane assembly set into the chassis one by one.**
4. **Fix the backplane assembly set with screws on both sides of chassis.**
5. **Connect the LED board signal cable for each backplane and LED board.**
6. **Refer to "Backplane wiring" session for the cable connection.**





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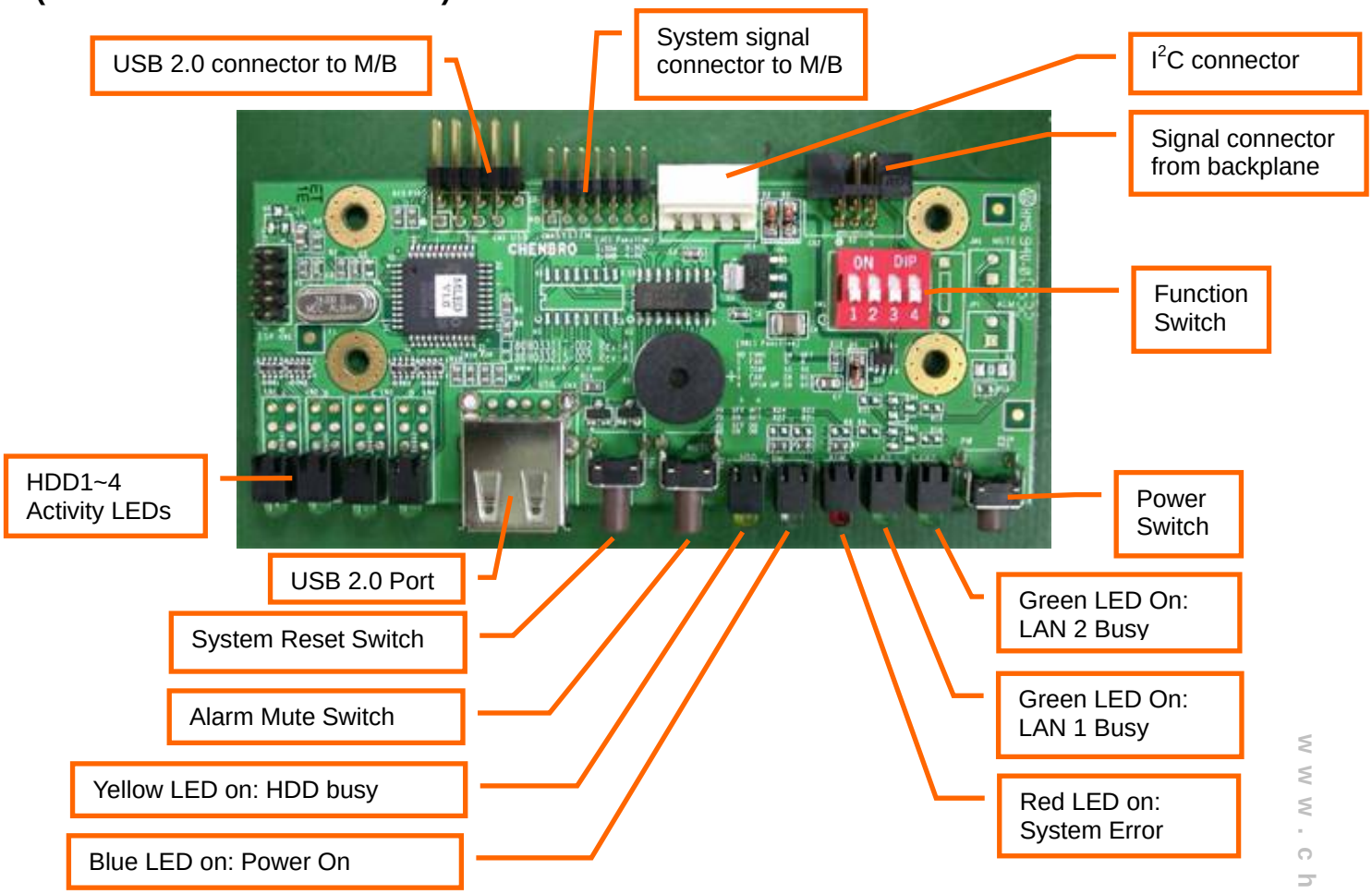
LED Board Specification

	According to HDD sequential spin up setting, please refer to the following instruction. The text printing of HDD sequential spin up function setting on older version 1U~5U LED boards are incorrect. **The incorrect LED board version are: 80H033117-002 ver. A0~A2 (1U)** **80H033215-005 ver. A0~A2 (2U~4U)** **80H173519-003 ver. A0~A1 (5U)** **The corrected LED board version are: 80H033117-002 ver. A3 (1U)** **80H033215-005 ver. A3 (2U~4U)** **80H173519-003 ver. A2 (5U)**

1U LED Board

(Part Number 80H033117-002)



Function Switch Pin Definition

	SW 1	SW 2	SW 3	SW 4
ON	Fan1~5 Monitoring Enable	System Alarm Temperature is 65˚C	Fan Monitoring Enable	HDD Sequential Spin up Disable
OFF	Fan1~4 Monitoring Enable	System Alarm Temperature is 55˚C	Fan Monitoring Disable	HDD Sequential Spin up Enable

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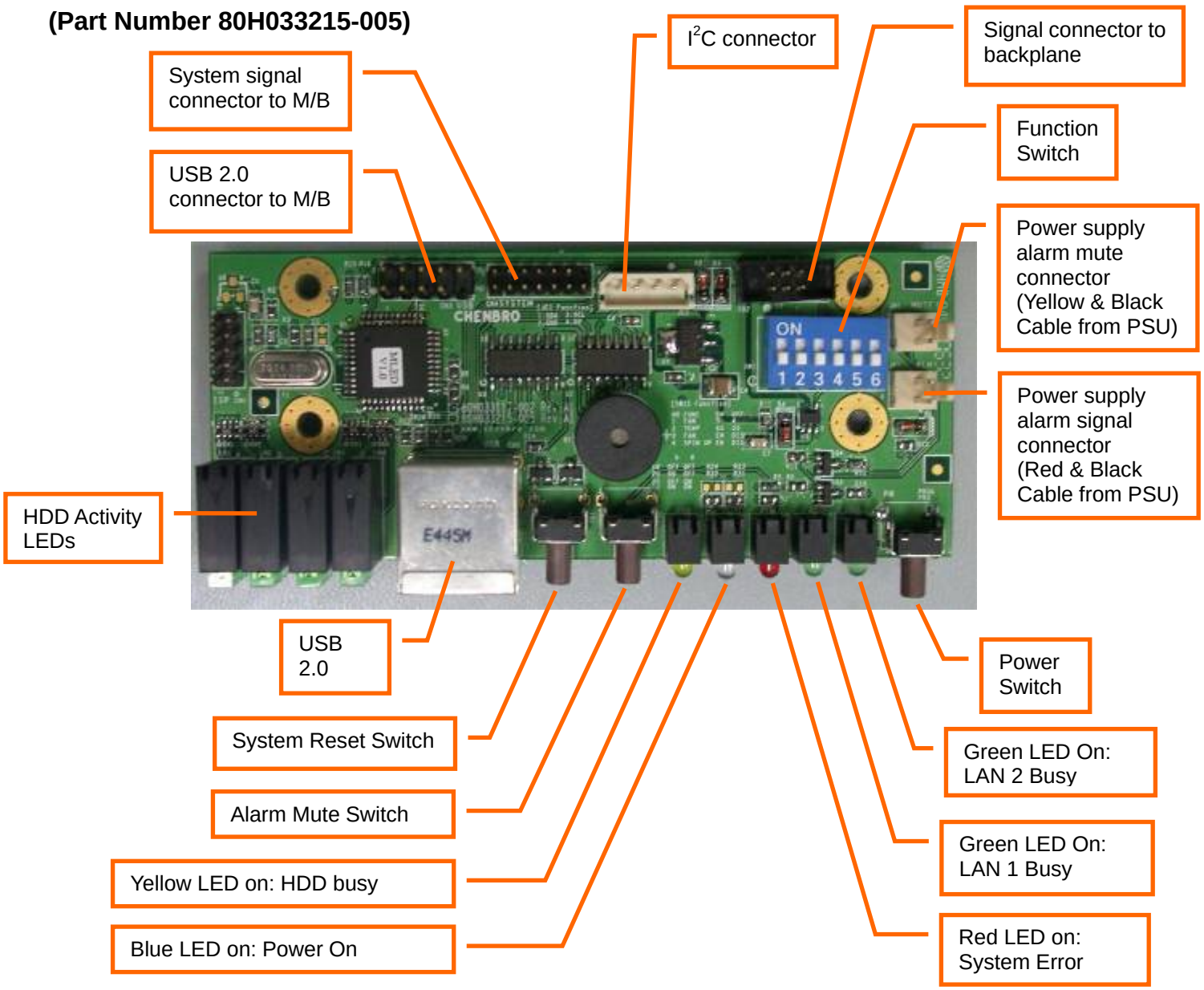
2U~4U LED Board
(Part Number 80H033215-005)


System signal connector to M/B
USB 2.0 connector to M/B
I²C connector
Signal connector to backplane
Function Switch
Power supply alarm mute connector (Yellow & Black Cable from PSU)
Power supply alarm signal connector (Red & Black Cable from PSU)
HDD Activity LEDs
USB 2.0
System Reset Switch
Alarm Mute Switch
Yellow LED on: HDD busy
Blue LED on: Power On
Power Switch
Green LED On: LAN 2 Busy
Green LED On: LAN 1 Busy
Red LED on: System Error

Function Switch Pin Definition

	SW 1	SW 2	SW 3	SW 4
ON	Fan1~5 Monitoring Enable	System Alarm Temperature is 65˚C	Fan Monitoring Enable	HDD Sequential Spin up Disable
OFF	Fan1~4 Monitoring Enable	System Alarm Temperature is 55˚C	Fan Monitoring Disable	HDD Sequential Spin up Enable

	SW 5	SW 6
4 HDDs	OFF	OFF
8 HDDs	ON	OFF
12 HDDs	OFF	ON
16 HDDs	ON	ON

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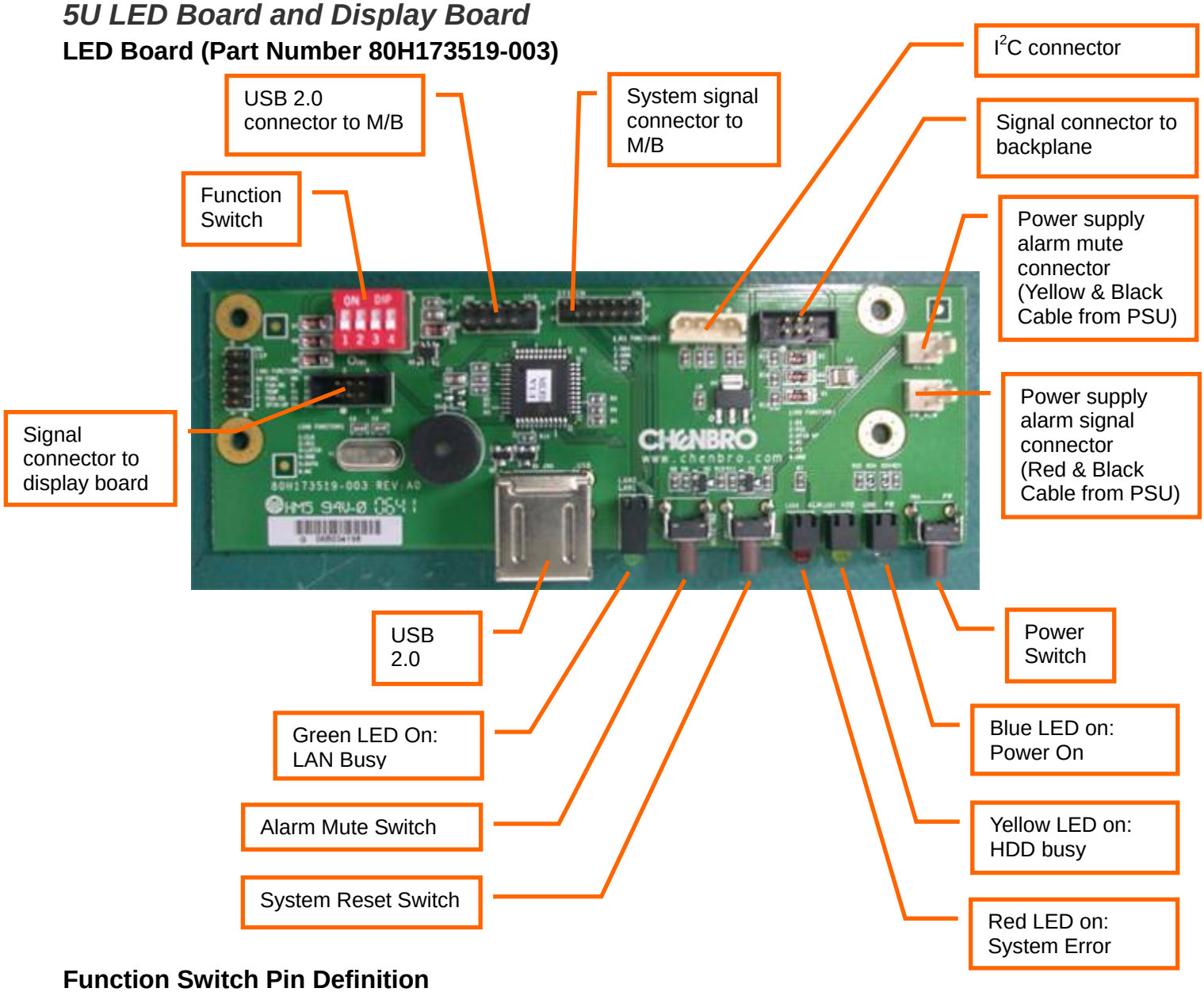
5U LED Board and Display Board

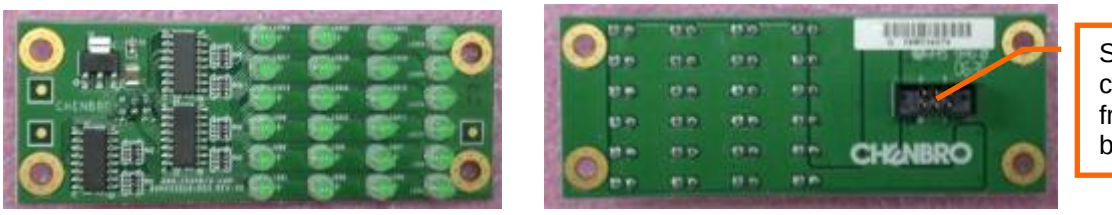
LED Board (Part Number 80H173519-003)


USB 2.0 connector to M/B
System signal connector to M/B
I2C connector
Function Switch
Signal connector to backplane
Power supply alarm mute connector (Yellow & Black Cable from PSU)
Signal connector to display board
Power supply alarm signal connector (Red & Black Cable from PSU)
USB 2.0
Power Switch
Green LED On: LAN Busy
Blue LED on: Power On
Alarm Mute Switch
Yellow LED on: HDD busy
System Reset Switch
Red LED on: System Error

Function Switch Pin Definition

	SW 1	SW 2	SW 3	SW 4
ON	Fan1~8 Monitoring Enable	System Alarm Temperature is 65˚C	Fan Monitoring Enable	HDD Sequential Spin up Disable
OFF	Fan1~7 Monitoring Enable	System Alarm Temperature is 55˚C	Fan Monitoring Disable	HDD Sequential Spin up Enable

Display Board (80H033519-003)



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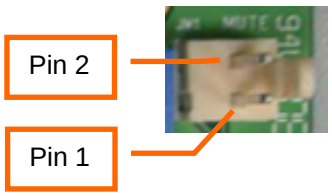
Power Supply Alarm Mute Connector Definition

Pin 1: Ground

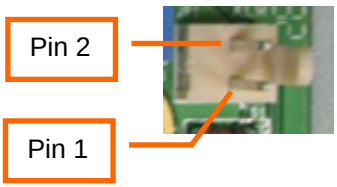
Pin 2: Alarm mute signal output to PSU (Active low)



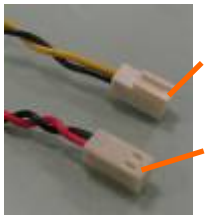
Power Supply Alarm Signal Connector Definition

Pin 1: Ground

Pin 2: PSU fail signal (TTL) input from PSU (Active low)



	Only redundant PSU come with the failure alarm and alarm mute reset control via signal connector. Make sure the redundant PSU that user applied come with the connectors above.

	This picture shows the standard "2510 2-pin" type PSU alarm signal connectors which fitting Chenbro LED board.	

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Mini-SAS Cables

The Mini-SAS backplane provides most benefits to users using the same backplane to support various SAS/SATA RAID card via different conversion cables. Chenbro provides various cables for different interfaces which include the followings:

(A)

SFF-8087 to SFF-8470

(B)

SFF-8087 to SFF-8087

(C)

SFF-8087 to 4 SATA

(D)

4 SATA to SFF-8087

(E)

SFF-8484 to SFF-8087

(F)

SFF-8088 to SFF-8088

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Table of Mini-SAS cable solution

Cable Type	Connector		P/N	Length
	BP side	Host side		
A	Mini-SAS (SFF-8087 36pin)	Infiniband / Multilane (SFF-8470)	26H113215-011	600 mm
B1	Mini-SAS (SFF-8087 36pin)	Mini-SAS (SFF-8087 36pin)	26H113215-027	200 mm
B2	Mini-SAS (SFF-8087 36pin)	Mini-SAS (SFF-8087 36pin)	26H113215-028	350 mm
B3	Mini-SAS (SFF-8087 36pin)	Mini-SAS (SFF-8087 36pin)	26H113215-029	500 mm
B4	Mini-SAS (SFF-8087 36pin)	Mini-SAS (SFF-8087 36pin)	26H113215-030	600 mm
C	Mini-SAS (SFF-8087 36pin)	SATA-7Pin x4	26H113215-010	600 mm
D	SATA-7Pin x4	Mini-SAS (SFF-8087 36pin)	26H113215-009	450 mm, 500 mm 650 mm, 750 mm
E	Mini-SAS (SFF-8087 36pin)	Wide-Port SAS (SFF-8484 R/A)	26H113215-026	600 mm
F	Mini-SAS (SFF-8088 36pin)	Mini-SAS (SFF-8088 36pin)	26H113325-003	860 mm

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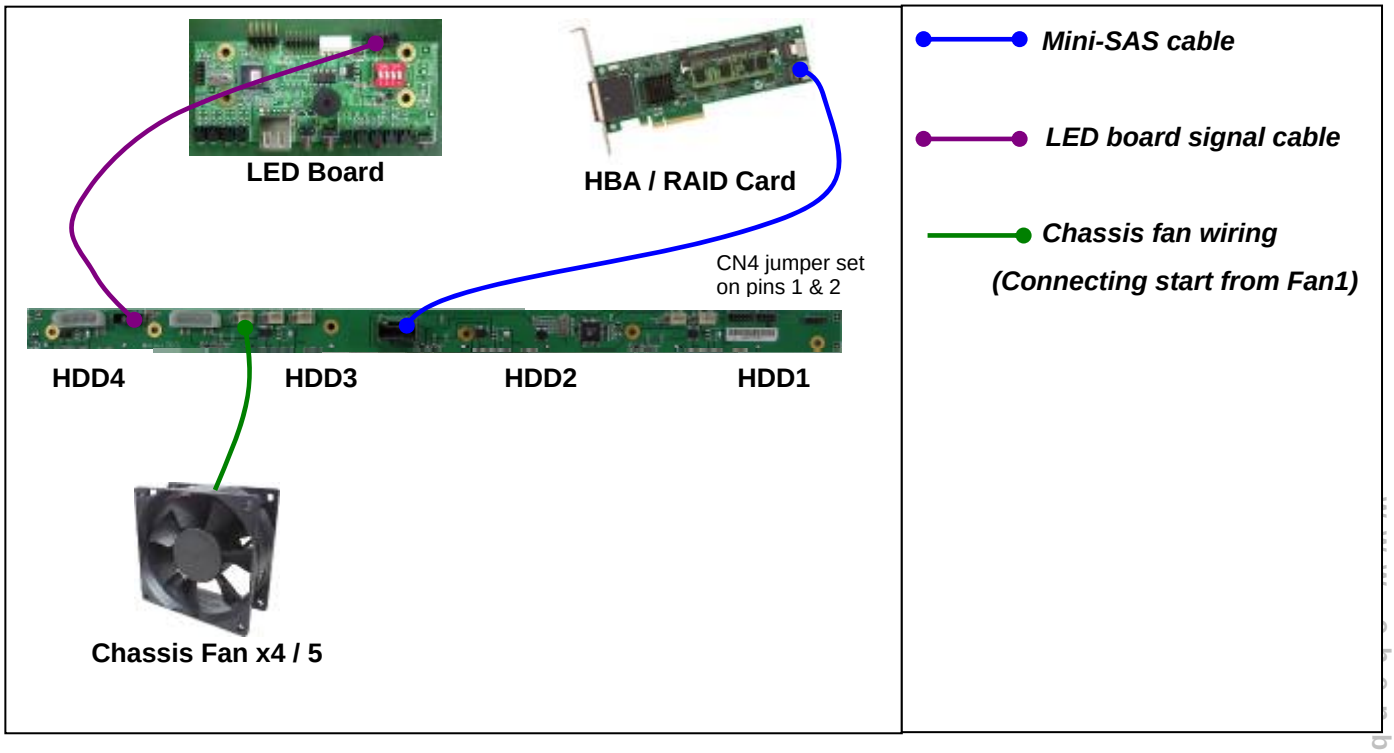
Backplane and LED Board Wiring

1. LED board signal cable: Get the HDD activity signals and internal protocol for the spin up of each backplane. This cable connects the backplanes (start from #1) and LED board.
2. Discrete HDD failure signal cable: This cable is optional for the HBA or RAID card with HDD failure signal support. It is connected by direct cable connection, and each backplane needs one 4P-4P discrete cable.
3. Fan connection: Connect the fan cable from Fan#1 to Fan#5 sequentially, and configure the fan quantity and monitoring setting DIP on the LED board accordingly.
4. Power connection: Connect the power connector from PSU. Since each backplane needs two 4-pin power connectors, it is strongly recommend do NOT using 4-pin connectors from same power wire for any single backplane.
5. HDD cable: Refer to "Mini-SAS Cables" session for detail below. Check the responded HBA or RAID card before installing.

Chassis Assembly Example

Example for RM11704B / RM12404B Mini-SAS backplane wiring



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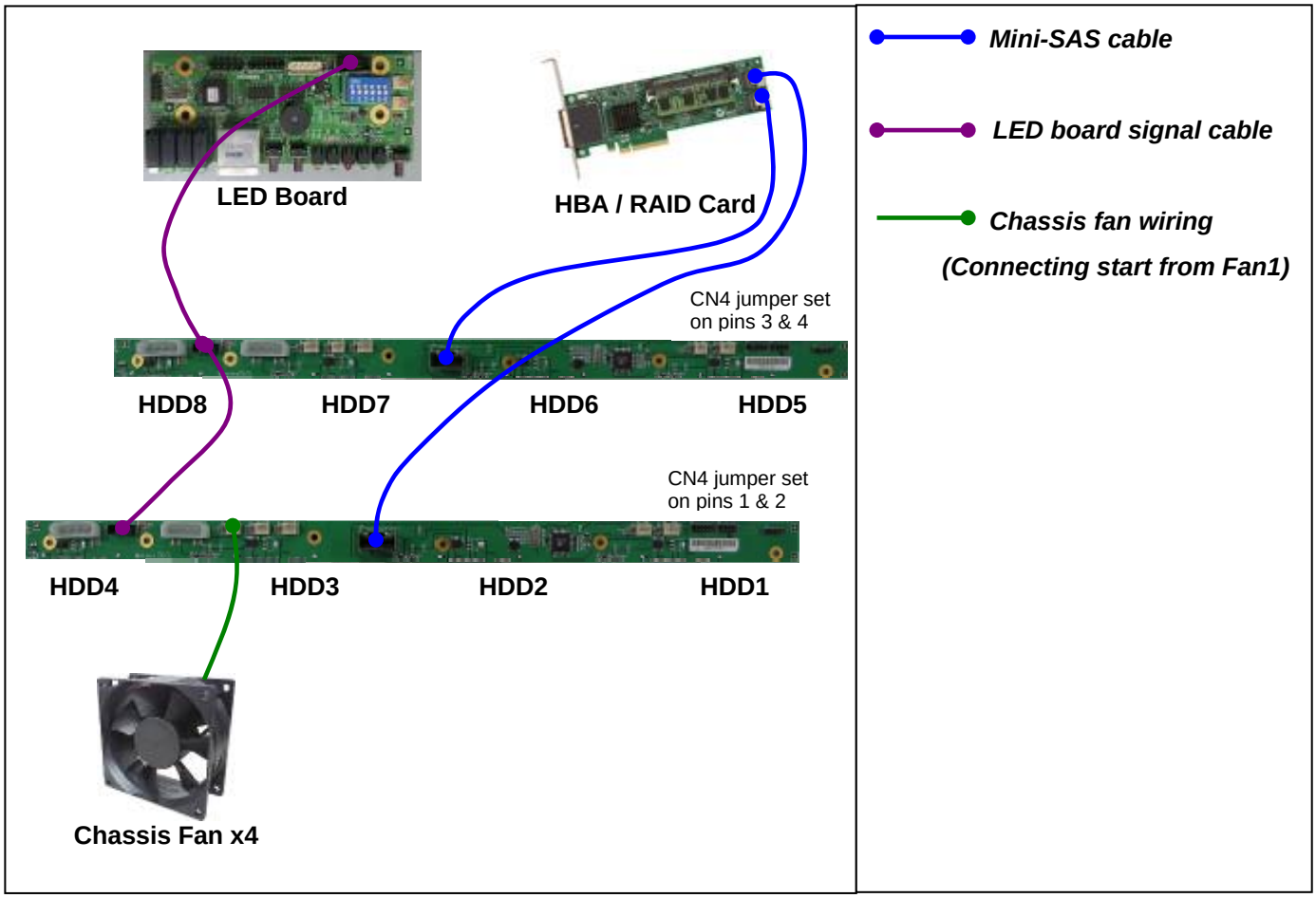
Example for RM21508B chassis Mini-SAS backplane wiring



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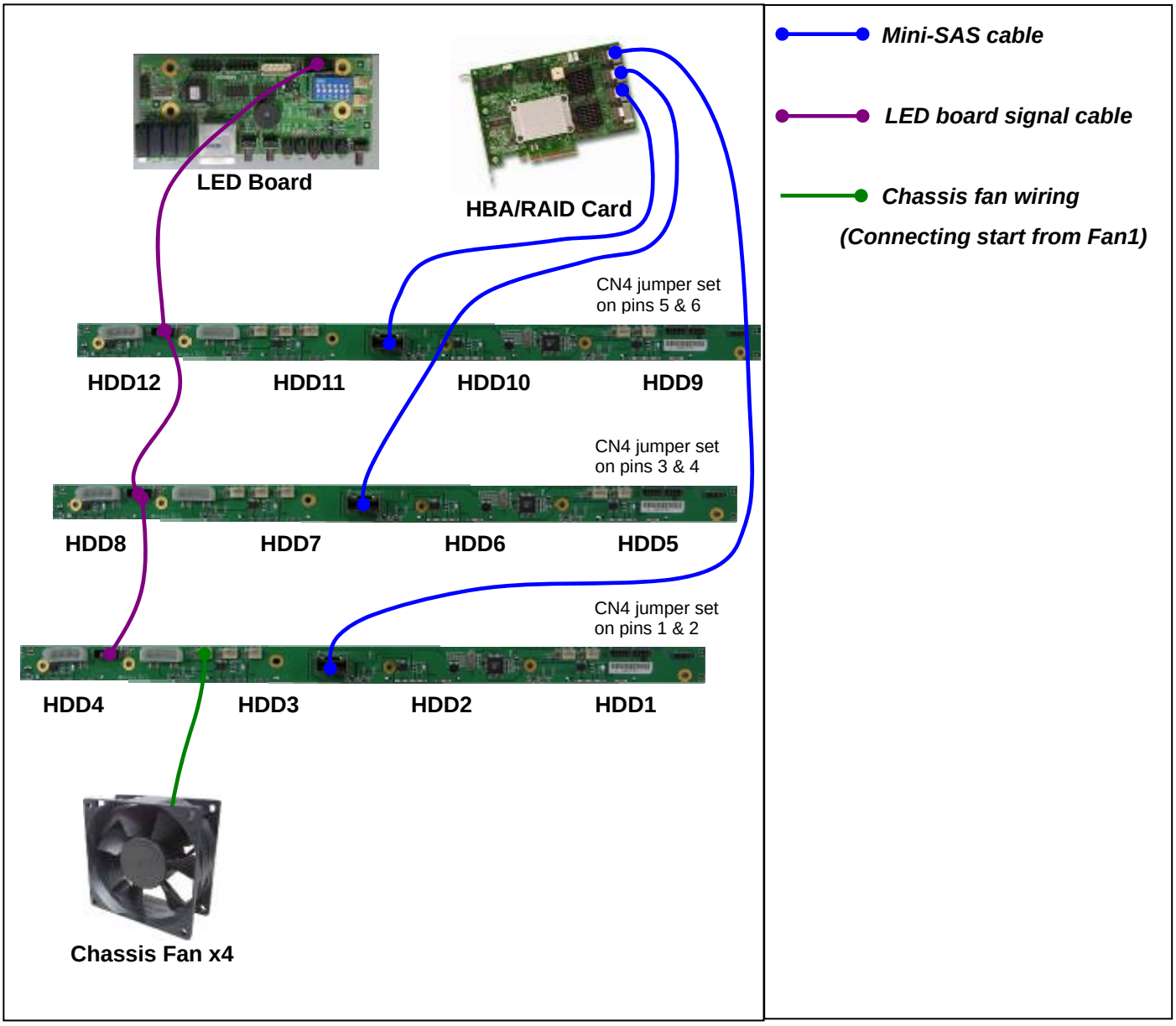
Example for RM31212B Mini-SAS backplane wiring



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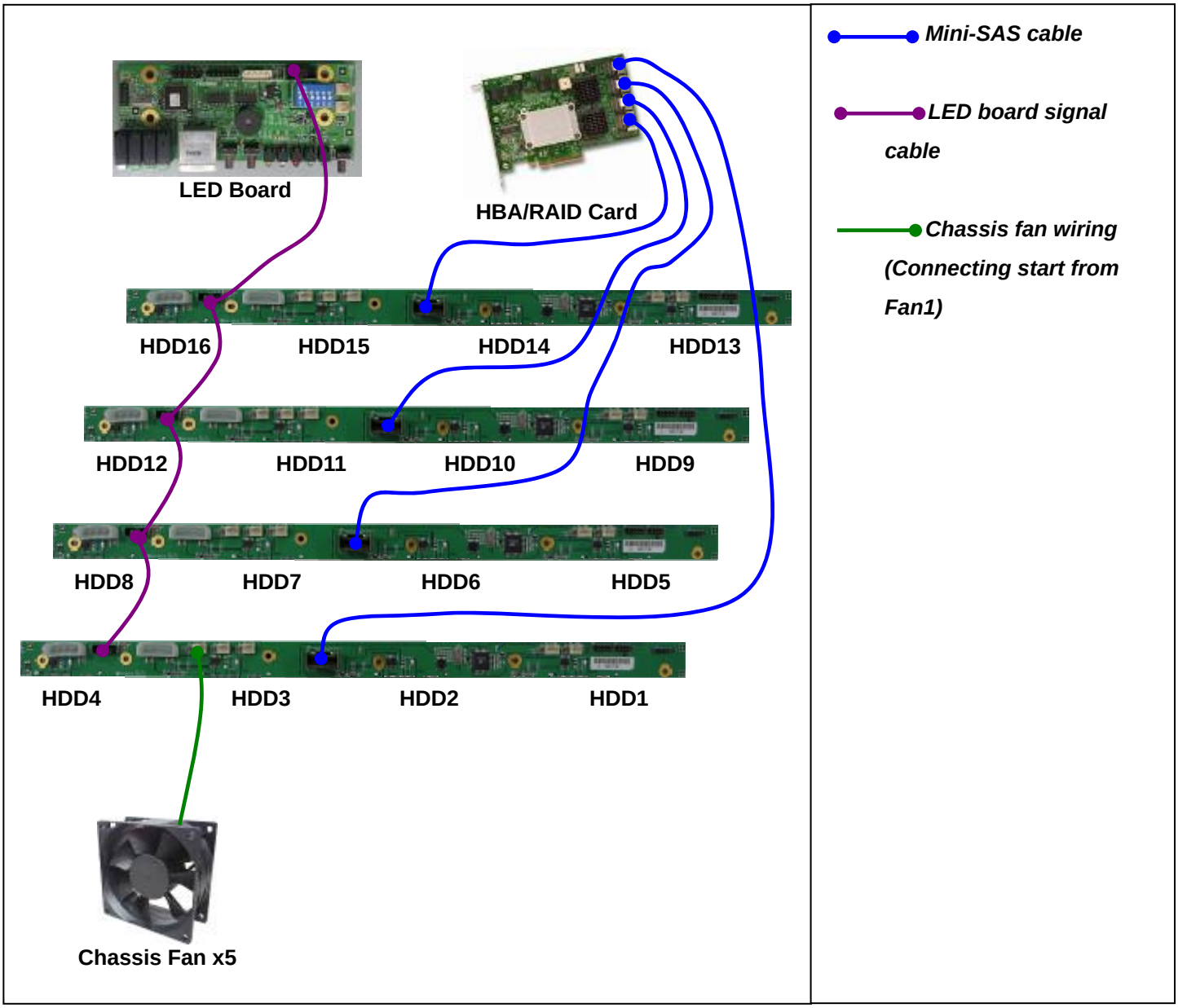
Example for RM41416B Mini-SAS backplane wiring



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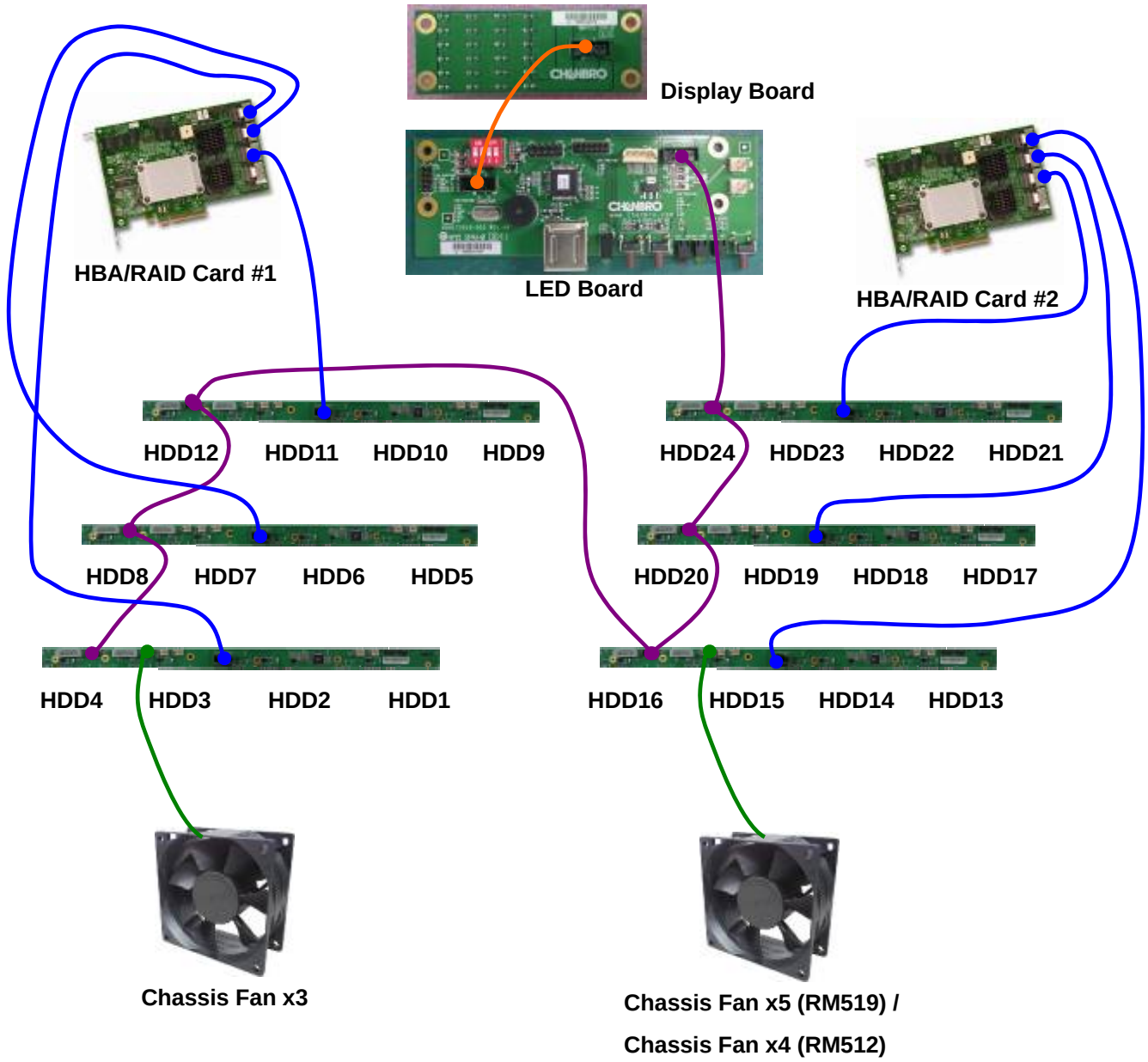
Example for RM51924B chassis Mini-SAS backplane wiring



Mini-SAS cable

LED board signal cable (for Backplane)

LED board signal cable (for LED Board)

Chassis fan wiring (Connecting start from Fan1)

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